10. Troubleshooting

Finding a defect on a coated surface is fairly easy, but finding its cause might not be.
In our experience most finishing problems emanate from variations in the process, not the product.

First, if you have a documented finishing system, check that you are following it and if the problem remains then check each step of the process again.

There are many parameters that influence the finishing process and you need to verify each one of them, one at a time, unless the origin of the problem is obvious. This involves locating the step in the process from where the problem originates, and normally the easiest way of doing this is to follow the process backwards. When you find the step in the process that is causing the problem, for example; the drying, application or sanding step, use Facts on finishing to help you solve the problem.

- 10.1 Application problems 54
  - 10.1.1 Spraying
  - 10.1.2 Curtain coating
  - 10.1.3 Roller coating
  - 10.1.4 Printing
- 10.2 Drying / curing problems 59
  - 10.2.1 Air drying
  - 10.2.2 Forced drying
  - 10.2.3 UV curing

10.1 Application problems

10.1.1 Spraying

"Blue" corners

Possible causes
- Edges too sharp.
- Viscosity too low.
- Corners sanded through when sanding primer.

Solutions
- Increase the radius of the corner either by denibber or in the woodworking process.
- Increase viscosity.
- Use a less coarse sandpaper when sanding the primer.

Bubble formation

Possible causes
- Air from the substrate.
- Incorrect thinner.

Solutions
- Lower viscosity.
- Slower thinner.

Craters / Fisheyes

Possible causes
- Substrate contaminated by silicone or oil.
- Compressed air contaminated by water or oil.

Solutions
- Locate the contaminating source (lubrication of woodworking equipment, compressed air system, lotions, ventilation seals)
- Contact Becker Acroma for advice.

Lifting / Wrinkling

Possible causes
- Excessive layer of topcoat applied.
- Topcoat applied before underlying layer is fully cured.
- Unsuitable combination of primer and topcoat (can also apply to pre-treated substrate).
- The products have been stacked too closely during drying, or the air circulation in the drying area was inadequate.
- Incorrect amount of hardener.

Solutions
- Rub down to clean wood surface.
- Contact Becker Acroma if unable to determine the cause of the defect.

Micro bubbles

Possible causes
- Incorrect thinner.
- Leakage in the spray gun channels or in the suction hose of the pump.

Solutions
- Change thinner.
- Check equipment.

Orange Peel

Possible causes
- Too high viscosity.
- Incorrect thinner.
- Excessive temperature difference between substrate and coating.
- Incorrect air/fluid pressure when spraying or incorrect distance from gun to substrate.
- Excessive air circulation (draught) in the spray area.
- Products too cold.

Solutions
- Sand down the defective surface.
- Remedy defects as described.
- If necessary, change to slower-acting thinner.

Pin holing

Possible causes
- Insufficient and excessively dry spraying of the substrate.
- Excessive application at high temperature or on heated substrate.
- Porous substrate (fibreboard, particleboard etc).
- Incorrect thinning.

Solutions
- Rub down the defective surface.
- Check viscosity of the coating.
- If necessary, use a slower thinner.
- Introduce other changes/measures to inhibit pin holing.

Sagging on edges

Possible causes
- Excessive amount applied.
- Too slow thinner.
- Too low viscosity.
- Incorrect angle of the gun (automatic spray machine).

Solutions
- Apply lower amount.
- Change to a faster thinner.
- Increase viscosity.
- Change the angle of the gun.

Striping

Possible causes
- Defective or dirty air or fluid nozzle.
- Incorrect gun settings.
- Conveyor speed and the guns transversal speed not synchronized.

Solutions
- Check and clean the nozzles.
- Check the spray gun positions and spray fan.
- Synchronize conveyor and transversal speed.

10.1.2 Curtain coating

"Blue" corners

Possible causes
- Edges too sharp.
- Viscosity too low.
- Corners sanded through when sanding primer.

Solutions
- Increase the radius of the corner either by denibber or in the woodworking process.
- Increase viscosity.
- Use a less coarse sandpaper when sanding the primer.

Grey dotted patterns

Possible cause
- Electrostatic charged panels.

Solutions
- Connect all machines to each other with a copper cable.
- Electrically earth all machines.
- Install de-ionizing equipment before the curtain coater.

Gloss and tone variations

Possible causes
- The jaws of the curtain coater are not parallel, applied amount uneven.
- The curtain is moving forward and backwards when coating which results in an uneven application amount.

Solution
- Adjust the jaws so they are parallel.
- Shield the curtain from air movements.

Sagging on edges

Possible cause
- Too high conveyor speed.
- Coating – thinner not optimal.

Solutions
- Decrease the conveyor speed.
- Contact Becker Acroma.

Splitting of curtain

Possible cause
- Air bubbles in the coating.
- Coating has incorrect surface tension or rheology.

Solutions
- Reduce the height of the curtain.
- Check that the paint groove is in place inside the curtain head.
- Check that the splash plate is in place in the return tank.
- Ensure that the head is fully filled with coating material and that you have a steady flow from the heads overflow valve.
- Try to make the coating flow/pump as smooth as possible with little or no turbulence.
- Make sure there is no leakage in the pump, could inject air into the coating.
- Try to remove foam and bubbles, for example, a nylon stocking can act as a filter if it is placed on the return-outlet.
- Contact Becker Acroma.

10.1.3 Roller coating

Ghost image of previous panel

Possible cause
- Application roller does not re-wet to the same level as for the previous panel.

Solution
- Apply scraper to the application roller.
- Contact Becker Acroma.

Line formation, crosswise

Possible cause

- Different speed on conveyor and application roller.
- Damaged application roller.
- Too high down pressure on application roller.
- Pressure between doctor and application roller too high.
- Doctor roller running reverse at too high speed.
- Not enough material between rollers when running doctor roller reverse.
- The bearings in either rollers or conveyor are damaged.

Solution

- Check application roller and conveyor speed (rollers must be clean).
- See if you can see any damaged in the application roller.
- Use less down pressure.
- Release pressure between rollers.
- Slow down reversing doctor roller.
- Increase the pump pressure.
- Change bearings.
- Ghost image of previous panel, see above.

Line formation, lengthwise

Possible cause

- Damaged scraper on doctor roller, or in case of a Light filler machine the scraper of the smoothing roller.
- Damaged application roller.
- The protective shutter in the UV oven is set too low (in feed).
- Ghost image of previous panel, see previous paragraph.

Rough patches when using Light filler machine (SAS)

Possible cause

- Too much variation of the substrate thickness. Smoothing roller can not reach low spots.
- Oversanding, if it is along the edges of the substrate. Smoothing roller cannot reach rounded edges.
- Application amount too low when using Opti roller.

Solution

- Calibrate substrate.
- Check the sanding process.
- Check application amount.

Rough surface

Possible cause

- Applied amount not correct, can be either too little, or too much.
- Viscosity of coating too high for this application.
- Too soft application roller.

Solution

- Lower application amount.
- Change product.
- Change to harder application roller.

Scrape marks and lip formation in front or end of panel

Possible cause

- The speed of the application roller and conveyor belt is not synchronized.
- Smoothing roller running too fast or at too high pressure.
- Too much material applied before smoothing when filling.

Solution

- Adjust the speed of the application roller.
- Decrease the speed of the smoothing roller and/or release pressure.
- Decrease application amount in Light filler machine by pressing doctor and application roller together, or change speed of doctor roller.

Stain colour too dark or too light

Possible cause
- Too hard (light) or soft (dark) stain roller.
- Wood sanding too fine (light) or too coarse (dark).

Solution
- If possible, change stain roller.
- Check the wood sanding process.
- Contact Becker Acroma.

Uncoated patches

Possible cause
- Poor calibration of substrate.

Solution
- Improve calibration.
- Change to softer application rollers.
- Check the application rollers pressure to the substrate.

10.1.4 Printing

Unsharp print picture

Possible cause
- Synchronization between print rollers off.
- Viscosity incorrect.
- Basecoat layer not smooth enough.
- Too high pressure of application roller to the substrate.

Solution
- Check synchronization.
- Check the viscosity of the inks.
- Ensure that correct amount of basecoat is applied.
- Release the pressure of the application roller on the substrate.

Weak print

Possible cause
- Viscosity incorrect.
- Incorrect substrate temperature (high or low).

Solution
- Check the viscosity of the inks.
- Check the surface temperature of the substrate prior printing.

Colour drifting

Possible cause
- Incorrect viscosity.
- Incorrect temperature of the inks.
- Surface temperature not correct.
- Poor UV curing of previous layer. (base coat and/or inks)

Solution
- Check viscosity.
- Make sure the temperature of the inks are OK and that ink used to refill the machine is at the same temperature.
- Check the surface temperature of the substrate prior to printing.
- Measure the UV lamps and ensure the energy and peak values are within prescribed specifications.

10.2 Drying / curing problems

10.2.1 Air drying

Blushing

Possible cause
- Humid environment in combination with fast thinners.
- Water not fully evaporated in water-based UV coatings.
- Extreme amounts of micro bubbles.

Solution
- Change to a slower thinner and, if possible, try to increase air temperature.
- Change drying setup. Increase either time, air velocity or temperature.
- See chapter on "micro bubbles" in the section on Spraying.

Bubble formation

Possible cause
- Air from the substrate.

Solution
- Change to a slower thinner.

Cracking

Possible cause
- Too low temperature when drying water-based coatings.
- Too high amount of hardener in acid cured systems.

Solution
- Sand down the surface and re-coat.
- Check mixing instructions.
- Check drying conditions.

Mud cracking

Possible cause
- Too much air movement when drying (water-based coatings).
- Excessive application amount (water-based coatings).

Solution
- Try to minimize air movement in the drying area.
- Reduce the applied amount.

Poor adhesion / Peeling

Possible cause
- Poor or no sanding between coating layers.
- Too much time has passed between sanding and lacquering.
- Coating dry sprayed.
- Too much catalyst used.
- Some foils and plastics are unsuitable for coating or require sanding before application.
- Poor combination of coating system. Some water-based coatings have poor adhesion to other types of coatings.

Solution
- Check that sealer/basecoat is properly sanded before applying the next layer.
- Sand the surface lightly again.
- Try to spray a full wet layer, change to a slower thinner.
- Ensure that the amount of catalyst is correct.
- Sand the foil thoroughly, change foil or apply special adhesion sealer.
- Contact Becker Acroma.

Soft film / Poor drying

Possible cause
- The coating is not fully cured because of too low temperature or too short drying cycle.
- Temperature too low during overnight drying.
- Incorrect quantity of hardener used.
- Hardener affected by moisture (PU coatings).

Solution
- Check temperature.
- Extend the drying time.
- Check that the temperature does not drop during after work hours if drying over night.
- Ensure that correct amount of hardener is used.
- Change hardener (PU coatings), always keep hardener container closed.

10.2.2 Forced drying

Blocking

Possible cause
- Surface temperature too high when stacking.
- Too short drying cycle.
- Temperature in ovens too low.
- Cooling section not working.
- Too much coating applied.
- UV oven not working properly (water-based UV coatings).
- Hardener amount too low.

Solution
- If possible, cool the surface before stacking.
- Stack lower.
- Increase drying cycle.
- Increase the temperature in the ovens.
- Check that the cooling section is working.
- Check the application amount.
- Check the energy and peak values of the UV oven.
- Ensure that the amount of hardener is correct.

Blushing

Possible cause
- Water not fully evaporated in water-based UV coatings.

Solution
- Increase oven temperatures, air velocity and drying time.
- Apply less coating.

Bubble formation

Possible cause
- Too much IR energy.
- Too high temperature in ovens.

Solution
- Decrease the IR energy.
- Decrease the temperature in the ovens.
- Increase the temperature in the flash off section.

Matt patches

Possible cause
- Bubbles that have burst too late leave matt patches. Mostly common when using a curtain coater.

Solution
- Try to minimize bubble formation in the curtain coater.
- Change to a slower thinner.
- Contact Becker Acroma.

Micro bubbles

Possible cause
- See chapter about spraying.
- Too much IR energy.

Solution
- See chapter about spraying.
- Decrease the IR energy.
- Increase the temperature in the flash off section.

Mud cracking

Possible cause
- Coating skins over before most of the water has evaporated out from the film.
- Too much coating applied.

Solution
- Decrease air velocity in flash off section.
- Apply less coating.
- Contact Becker Acroma.

Poor adhesion / Peeling

Possible cause
- Poor or no sanding between coating layers.
- Too much time has passed between sanding and lacquering.
- Coating dry sprayed.
- Too much catalyst used.
- Some foils and plastics are unsuitable for coating or require sanding before application.
- Poor combination of coating system. Some water-based coatings have poor adhesion to other types of coatings.

Solution
- Check that sealer/basecoat is properly sanded before applying the next layer.
- Sand the surface lightly again.
- Try to spray a full wet layer, change to a slower thinner.
- Ensure that the amount of catalyst is correct.
- Sand the foil thoroughly, change foil or apply special adhesion sealer.
- Contact Becker Acroma.

Resin/Sap migration

Possible cause
- Resinous wood such as pine is dried at too high temperature.

Solution
- Decrease oven temperature and IR energies so the surface temperature of the substrate stays below 45°C during the drying process.

10.2.3 UV curing

Odour

Possible cause
- UV coating not fully cured.

Solution
- Check energy and peak values of the UV lamps.

Colour

Possible cause
- Some UV lacquers might turn yellow when curing.
- Incorrect type of stain used underneath the UV coating.
- Incorrect application amount.
- Different quality or producer of the substrate compared to the time of setup.

Solution
- Change to a different product.
- Wait, some initial yellowing vanishes after one hour.
- Check the applied amount.
- Compare original substrate with present and either change back or re-match the colour.

Gloss, low / high

Possible cause

- Thin layer of topcoat gives lower gloss.
- Thick layer of topcoat gives higher gloss.
- If the UV energy and peak of first the UV lamp is low then the gloss will be low.
- High surface temperature of the substrate gives lower gloss.
- Poor curing of the previous coat can influence the gloss (up or down).

Solution

- Change the application amount.
- Change the energy and/or the height of the first lamp.
- Try to lower the surface temperature. Turn off lamps in the previous ovens, but ensure that power is efficient.
- Check the energy of all UV lamps in the line.

Haze

Possible cause

- Poor curing, might show up as a haze weeks after application.

Solution

- Check UV energy and peak regularly.

Poor adhesion / Peeling

Possible cause

- Poor sanding.
- Poor curing.
- Too good curing of previous layer.
- Application amount too high.

Solution

- Improve sanding.
- Check UV energy and peak.
- Check application amount.

Scratch sensitive surface

Possible cause

- Poor curing.
- Application amount too low.
- Incorrect product for this application.

Solution

- Check UV energy and peak.
- Check application amount.
- Contact Becker Acroma.

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